

- 1 1. A trainable system for providing an interface to an existing software application
2 via a wired or wireless network, comprising:
3
4 a first computer operating a trainable user interface translator application and
5 adapted to store a shaper rule set;
6
7 a Web server electrically connected to the first computer, one or more client
8 devices, and a format data storage device;
9
10 a training terminal electrically connected to the first computer for establishing the
11 shaper rule set during a training session;
12
13 one or more host computers electrically connected to the first computer and
14 operating one or more existing host applications, thereby generating data streams
15 which may be monitored by the first computer;
16
17 a network providing electrical connection between the first computer and the web
18 server, the first computer and the training terminal, the first computer and the one
19 or more host computers, and the web server and one or more client devices;
20
21 wherein the first computer transmits data received from the one or more client
22 devices via the web server to the one or more host computers and, according to
23 the shaper rule set established during the training session, monitors and
24 reinterprets the data streams present in the existing host applications into updated
25 forms for transmission to the web server, which reformats the updated forms
26 using format data stored in the format data storage device for transmission to the
27 one or more client devices.
28

- 1 2. The trainable system of claim 1, wherein the network is a wired or wireless
2 intranet.
3
- 4 3. The trainable system of claim 1, wherein the network is the Internet.
5
- 6 4. The trainable system of claim 1, further comprising an auxiliary database
7 electrically connected to the first computer for storage and retrieval of training
8 data sets to be employed during the training session.
9
- 10 5. The trainable system of claim 1, wherein at least one of the one or more host
11 computers comprises a remote host computer further including a remote storage
12 device and operating at least one remote host application.
13
- 14 6. The trainable system of claim 1, wherein the one or more client devices is a
15 device upon which operates a browser application.
16
- 17 7. The trainable system of claim 1, wherein the one or more client devices is a
18 device upon which operates any rendering application that converts a data stream
19 into visual form.
20
- 21 8. The trainable system of claim 1, further comprising a rule set storage device
22 electrically connected to the first computer for storing the shaper rule set.
23
- 24 9. In a trainable system comprising a first computer operating a trainable user
25 interface translator application and adapted to store a rule set, a web server
26 electrically connected to the first computer and a client device, one or more host
27 computers electrically connected to the first computer and operating one or more
28 host applications, and a training terminal electrically connected to the first
29 computer, a method of defining the representation of data on the client device and

1 training the trainable system to operate the one or more host applications to insert
2 data to and extract data from one or more host computers comprising the steps of:
3
4 defining a transaction from the training terminal;
5
6 selecting sample training data sets;
7
8 choosing a data set from the training data sets;
9
10 defining input and result screens;
11
12 creating an actual screen representation in accordance with the requirements of
13 the one or more host applications using the training terminal;
14
15 creating a list of input and output variables;
16
17 starting training mode on the training terminal and selecting a starting page from a
18 client device;
19
20 filling in page data from the client device;
21
22 transmitting the page data to the first computer from the client device via the web
23 server;
24
25 exercising the one or more host applications from the training terminal to obtain
26 needed responses to the page data, while storing the sequence of steps for
27 exercising the one or more host applications as a rule set;
28

1 instructing the first computer from the training terminal to send a response page to
2 the client device via the web server, while storing additional elements in the rule
3 set;

4
5 completing a form contained in the response page at the client device and sending
6 the completed form to the training terminal via the first computer;

7
8 determining if the trainable system is fully trained to complete a business process,
9 and if not, reverting to the step of exercising the one or more host applications;
10 and

11
12 determining if there are additional selected sample training data sets to process,
13 and if so, reverting to the choosing a data set step.

14
15 10. The method of claim 9, wherein the electrical connections are provided by a wired
16 network.

17
18 11. The method of claim 9, wherein the electrical connections are provided by a
19 wireless network.

20
21 12. The method of claim 9, wherein at least one of the one or more host computers
22 comprises a remote host computer operating at least one remote host application.

23
24 13. The method of claim 9, wherein the client device is a device upon which operates
25 a browser application.

26
27 14. The method of claim 9, wherein the client device is a device upon which operates
28 any rendering application that converts a data stream into visual form.

- 1 15. The method of claim 9, wherein the sample training data sets are stored in and
2 retrieved from an auxiliary database.
3
- 4 16. The method of claim 9, wherein the web server formats the response page by
5 combining format data stored on a format data storage device with page name and
6 variable data received from the first computer.
7
- 8 17. In a trained system comprising a first computer storing a rule set, a web server
9 electrically connected to the first computer and a client device, a host computer
10 electrically connected to the first computer and operating one or more existing
11 host applications, wherein wired and wireless networks provide the electrical
12 connections, a method of using the first computer to operate the one or more
13 existing host applications via wired and wireless networks comprising the steps
14 of:
15
16 requesting at the client device a starting form from the first computer via the web
17 server;
18
19 filling in at the client device form data into a form returned from the first
20 computer and submitting the form data to the first computer;
21
22 accessing the one or more host applications by the first computer in accordance
23 with the stored rule set, thereby entering data, obtaining data, and responding to
24 exceptions in a manner predetermined during a training session;
25
26 transmitting to the web server variable data obtained by interacting with the one
27 or more host applications;
28

1 combining the variable data with page format data to produce a formatted page;
2 and

3
4 determining if the business process is complete, and if not, reverting to the
5 accessing step.

6
7 18. The method of claim 17, wherein the variable data is further obtained by
8 interacting with an auxiliary storage device.

9
10 19. The method of claim 17, wherein the variable data is further obtained by internal
11 calculation.

12
13 20. The method of claim 17, wherein the host computer is a remote host computer
14 operating one or more remote host applications.

15
16 21. A trainable system for providing a voice interface to an existing software
17 application, comprising:
18
19 a first computer operating a trainable user interface translator application and
20 adapted to store a shaper rule set;
21
22 a text-to-speech and speech-to-text interface computer electrically connected to
23 the first computer, one or more voice-enabled client devices, and a vocabulary
24 data storage device;
25
26 a training terminal electrically connected to the first computer for establishing the
27 shaper rule set during a training session;
28

1 one or more host computers electrically connected to the first computer and
2 operating one or more existing host applications, thereby generating data streams
3 which may be monitored by the first computer;

4
5 wherein the first computer transmits data received from the one or more voice-
6 enabled client devices via the text-to-speech and speech-to-text interface
7 computer to the one or more host computers and, according to the shaper rule set
8 established during the training session, monitors and reinterprets the data streams
9 present in the existing host applications into updated forms for transmission to the
10 text-to-speech and speech-to-text interface computer, which reformats the updated
11 forms using vocabulary data stored in the vocabulary data storage device for
12 transmission to the one or more voice-enabled client devices.

13
14 22. The trainable system of claim 21, wherein a network provides the electrical
15 connections between the first computer and the text-to-speech and speech-to-text
16 interface computer, the first computer and the training terminal, the first computer
17 and the one or more host computers, and the text-to-speech and speech-to-text
18 interface computer and one or more voice-enabled client devices.

19
20 23. The trainable system of claim 21, further comprising an auxiliary database
21 electrically connected to the first computer for storage and retrieval of training
22 data sets to be employed during the training session.

23
24 24. The trainable system of claim 21, wherein at least one of the one or more host
25 computers comprises a remote host computer further including a remote storage
26 device and operating at least one remote host application.

27
28 25. The trainable system of claim 21, further comprising a rule set storage device
29 electrically connected to the first computer for storing the shaper rule set.

- 1
2 26. In a trainable system comprising a first computer operating a trainable user
3 interface translator application and adapted to store a rule set, a text-to-speech and
4 speech-to-text interface computer electrically connected to the first computer and
5 a voice-enabled client device, one or more host computers electrically connected
6 to the first computer and operating one or more host applications, and a training
7 terminal electrically connected to the first computer, a method of defining the
8 representation of data on the voice-enabled client device and training the trainable
9 system to operate the one or more host applications to insert data to and extract
10 data from one or more host computers comprising the steps of:
11
12 defining a transaction via the training terminal;
13
14 selecting sample training data sets;
15
16 choosing a data set from the training data sets;
17
18 defining input and output portions;
19
20 creating a required spoken representation of prompts, valid responses, and outputs
21 in accordance with the requirements of the one or more host applications via the
22 training terminal;
23
24 creating a list of input and output variables, and associated vocabulary lists;
25 requesting a starting prompt from a voice-enabled client device;
26
27 replying to the prompt via the voice-enabled client device;
28

- 1 transmitting the reply to the first computer from the voice-enabled client device
2 via the text-to-speech and speech-to-text interface computer;
3
4 exercising the one or more host applications from the training terminal to obtain
5 needed responses to the reply transmitted, while storing the sequence of steps for
6 exercising the one or more host applications as a rule set;
7
8 instructing the first computer via the training terminal to send a response to the
9 voice-enabled client device via the text-to-speech and speech-to-text interface
10 computer, while storing additional elements in the rule set;
11
12 speaking the sample data via the voice-enabled client device and sending the
13 voice data to the training terminal via the first computer;
14
15 determining if the trainable system is fully trained to complete a business process,
16 and if not, reverting to the step of exercising the one or more host applications;
17 and
18
19 determining if there are additional selected sample training data sets to process,
20 and if so, reverting to the choosing a data set step.
21
- 22 27. The method of claim 26, wherein the electrical connections are provided by a
23 wired network.
24
- 25 28. The method of claim 26, wherein the electrical connections are provided by a
26 wireless network.
27
- 28 29. The method of claim 26, wherein at least one of the one or more host computers
29 comprises a remote host computer operating at least one remote host application.

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2 30. The method of claim 26, wherein the sample training data sets are stored and
3 retrieved from an auxiliary database.

4

5 31. The method of claim 26, wherein the text-to-speech and speech-to-text interface
6 computer formats the response by combining vocabulary data stored on a
7 vocabulary data storage device with prompt and variable data received from the
8 first computer.

9

10 32. In a trained system comprising a first computer storing a rule set, a text-to-speech
11 and speech-to-text interface computer electrically connected to the first computer
12 and a voice-enabled client device, a host computer electrically connected to the
13 first computer and operating one or more existing host applications, a method of
14 using the first computer to interface an existing software application with a voice-
15 enabled client device comprising the steps of:

16

17 requesting via the voice-enabled client device a starting prompt from the first
18 computer via the text-to-speech and speech-to-text interface computer;

19

20 replying via the voice-enabled client device to the prompt returned from the first
21 computer and submitting the reply data to the first computer;

22

23 accessing the one or more host applications by the first computer in accordance
24 with the stored rule set, thereby entering data, obtaining data, and responding to
25 exceptions in a manner predetermined during a training session;

26

27 transmitting variable data to the text-to-speech and speech-to-text interface
28 computer obtained by interacting with the one or more host applications;

1 combining the variable data with vocabulary data to produce a spoken message;
2 and

3
4 determining if the business process is complete, and if not, reverting to the
5 accessing step.

6
7 33. The method of claim 32, wherein the variable data is further obtained by
8 interacting with an auxiliary storage device.

9
10 34. The method of claim 32, wherein the variable data is further obtained by internal
11 calculation.

12
13 35. The method of claim 32, wherein the host computer is a remote host computer
14 operating one or more remote host applications.

15
16 36. A trainable system for providing an interface to an existing software application
17 in a different language, comprising:

18
19 a first computer operating a trainable user interface translator application and
20 adapted to store a shaper rule set;

21
22 an interface computer electrically connected to the first computer, one or more
23 client devices, and a format data storage device;

24
25 a training terminal electrically connected to the first computer for establishing the
26 shaper rule set during a training session;

27

1 one or more host computers electrically connected to the first computer and
2 operating one or more existing host applications, thereby generating data streams
3 which may be monitored by the first computer;
4

5 wherein the first computer transmits data received from the one or more client
6 devices via the interface computer to the one or more host computers and,
7 according to the shaper rule set established during the training session, monitors
8 and reinterprets the data streams present in the existing host applications into
9 updated forms for transmission to the interface computer, which reformats the
10 updated forms using target language data stored in the format data storage device
11 for transmission to the one or more client devices.
12

13 37. The trainable system of claim 36, wherein a network provides the electrical
14 connections between the first computer and the interface computer, the first
15 computer and the training terminal, the first computer and the one or more host
16 computers, and the interface computer and one or more client devices.
17

18 38. The trainable system of claim 36, further comprising an auxiliary database
19 electrically connected to the first computer for storing training data sets to be
20 employed during the training session.
21

22 39. The trainable system of claim 36, wherein at least one of the one or more host
23 computers comprises a remote host computer further including a remote storage
24 device and operating at least one remote host application.
25

26 40. The trainable system of claim 36, further comprising a rule set storage device
27 electrically connected to the first computer for storing the shaper rule set.
28

- 1 41. In a trainable system comprising a first computer operating a trainable user
2 interface translator application and adapted to store a rule set, an interface
3 computer electrically connected to the first computer and a client device, one or
4 more host computers electrically connected to the first computer and operating
5 one or more host applications, and a training terminal electrically connected to the
6 first computer, a method of defining the representation of data on the client device
7 and training the trainable system to operate the one or more host applications to
8 insert data to and extract data from one or more host computers in another
9 language, comprising the steps of:
10
11 defining a transaction via the training terminal and storing data elements of the
12 transaction in a rule set;
13
14 selecting sample training data sets in a source language and a target language;
15
16 choosing a data set from the training data sets;
17
18 defining input and output screens in accordance with interface requirements of the
19 one or more host applications;
20
21 creating a representation of input and output screens in the target language via the
22 training terminal;
23
24 creating a list of input and output variables associated with each input and output
25 screen;
26
27 creating an output data translation vocabulary;
28
29 creating an input data translation vocabulary;

1
2 initiating training via the training terminal and requesting a starting page from the
3 client device;

4
5 completing with page data a form returned from the interface computer in
6 response to the request for the starting page;

7
8 transmitting the page data to the first computer via the interface computer;

9
10 exercising the one or more host applications via the training terminal to obtain
11 needed responses to the page data submitted, while storing the sequence of steps
12 for exercising the one or more host applications in the rule set;

13
14 instructing the first computer to send the page data and a response page to the
15 interface computer for formatting in accordance with format data stored on the
16 format data storage device and forwarding to the client device, while storing
17 additional elements in the rule set;

18
19 replying via the client device with sample data to the training terminal via the
20 interface computer and first computer;

21
22 determining if the trainable system is fully trained to complete a business process,
23 and if not, reverting to the step of exercising the one or more host applications;
24 and

25
26 determining if there are additional selected sample training data sets to process,
27 and if so, reverting to the choosing a data set step.

- 1 42. The method of claim 41, wherein the electrical connections are provided by a
2 wired network.
3
- 4 43. The method of claim 41, wherein the electrical connections are provided by a
5 wireless network.
6
- 7 44. The method of claim 41, wherein at least one of the one or more host computers
8 comprises a remote host computer operating at least one remote host application.
9
- 10 45. The method of claim 41, wherein the sample training data sets are stored in and
11 retrieved from an auxiliary database.
12
- 13 46. In a trained system comprising a first computer storing a rule set, an interface
14 computer electrically connected to the first computer and a client device, a host
15 computer electrically connected to the first computer and operating one or more
16 existing host applications, a method of using the first computer to operate an
17 existing software application in another language comprising the steps of:
18
- 19 requesting, using the client device, a starting page of a transaction in a target
20 language from the first computer via the interface computer which translates the
21 target language to a source language;
22
- 23 filling in, at the client device, page data into a page returned from the first
24 computer and submitting the page data to the first computer;
25
- 26 accessing the one or more host applications in the source language in accordance
27 with the stored rule set, thereby entering data, obtaining data, and responding to
28 exceptions in a manner predetermined during a training session;
29

1 transmitting to the interface computer variable data obtained by interacting with
2 the one or more host applications;

3
4 combining the variable data with page format data to produce a page formatted to
5 cultural conventions, and transmitting the formatted page to the client device in
6 the target language; and

7
8 determining if the business process is complete, and if not, reverting to the
9 accessing step.

10

11 47. The method of claim 46, wherein the variable data is further obtained by
12 interacting with an auxiliary storage device.

13

14 48. The method of claim 46, wherein at least one of the one or more host computers is
15 a remote host computer operating one or more remote host applications.

16

17